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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/680,308	10/06/2000	Hubertus J.M. Bosman	PM 274361 9271US/CON/WO	9025

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EXAMINER	
GRIFFIN, WALTER DEAN	
ART UNIT	**PAPER NUMBER**
1764	7

DATE MAILED: 04/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

TC-7

Office Action Summary	Application No.	Applicant(s)	
	09/680,308	BOSMAN ET AL.	
	Examiner	Art Unit	
	Walter D. Griffin	1764	

-- The MAILING DATE of this communication appears on th cov r sheet with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

The rejections under 35 U.S.C. § 112, second paragraph, as described in paper no. 5 have been withdrawn in view of the amendment filed on March 26, 2002.

Claim Objections

Claim 15 is objected to because of the following informalities: In line 2 of claim 15, the word "contaminating" is incorrect. It should apparently be "contaminated". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 17 and 18 are indefinite because it is unclear if the amount of phenyl acetylene claimed is prior to or after hydrogenation. From the specification on page 6, lines 1-3, it appears that the claimed values refer to post-hydrogenation levels. However, this is not clear in the claims.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 14 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation that the hydrogenation can be carried out for at least about 100 days without regeneration of the catalyst is new matter. The examples provide support for specific times on stream but do not provide support for the entire range of 100 days or more.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-12, 14, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gattuso et al. (4,734,540).

The Gattuso reference discloses a process for selectively hydrogenating compounds containing triple bonds to the corresponding monoolefinic compound by contacting the triple bond containing compounds and hydrogen with a catalyst at hydrogenation conditions. A specifically disclosed application of the process is the selective hydrogenation of phenylacetylene to styrene. The catalyst used in the process comprises nickel supported on alumina. The amount of nickel in the catalyst ranges from about 1 to 25 weight percent. The alumina in the support may be essentially gamma alumina. The hydrogenation temperature is between about 25° and 350°C and the LHSV is above 1.0 hr^{-1}. The mole ratio of hydrogen to triple bond containing compound ranges from 1:1 to 1.8:1. The process is conducted in a fixed bed reactor with the reactants flowing upward through the reactor. The feed to the process contains about 0.1 to 5 weight percent of the triple bond containing compound. The product from the hydrogenation zone is substantially free (less than 1000 ppm) of the compounds containing triple bonds. This includes values within the claimed ranges of claim 17 and 18. See col. 1, lines 16-36; col. 2, lines 25-36; col. 3, line 18 through col. 4, line 59; col. 6, lines 17-22; and col. 6, line 62 through col. 7, line 23.

The Gattuso reference does not specifically disclose the hydrogenation of phenylacetylene in a styrene-containing medium containing the claimed amounts of styrene. The Gattuso reference also does not disclose the claimed length on stream as in claim .

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Gattuso by hydrogenating phenylacetylene in a styrene-containing medium because Gattuso discloses that the feed may contain a mixture of different compounds having the same number of carbon atoms. Therefore, one having ordinary skill in the art would expect a mixture of styrene and phenylacetylene to be effectively hydrogenated in the Gattuso process because this mixture falls within the general class of feeds disclosed by Gattuso. Regarding the amount of styrene, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize feeds having the claimed amount of styrene because any amount of styrene present in the mixture would be expected to form a feed in which the phenylacetylene is effectively hydrogenated as long as the amount of phenylacetylene in the feed is within the disclosed range of 0.1 to 5 weight percent.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Gattuso by hydrogenating for more than 100 days without regeneration because one would operate the process without regeneration of the catalyst as long as the hydrogenation proceeds at a desired level. Additionally, there is no indication in the figures that the catalyst (Process A) has lost any activity even after approximately 26 days on stream.

Claims 13, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gattuso et al. (4,734,540) as applied to claim 1 above, and further in view of Barry (2,511,453).

As discussed above, the Gattuso reference does not disclose an additional metal as in claim 13 and does not disclose regenerating the catalyst.

The Barry reference discloses a selective hydrogenation catalyst that comprises nickel supported on a carrier. The catalyst may also contain an additional metal such as gold or chromium. The catalyst may be used to hydrogenate phenyl acetylene in the presence of styrene. The catalyst may be regenerated by contacting it with air and an inert gas followed by reduction with hydrogen. See col. 5, line 28 through col. 6, line 16 and col. 8, lines 16-31.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Gattuso by including an additional metal such as gold or chromium as suggested by Barry because these additional metals promote the desired effect of selective hydrogenation.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Gattuso by regenerating the catalyst as suggested by Barry because the catalysts of the two references are similar in composition thereby resulting the expectation that the catalyst of Gattuso will be effectively regenerated by the regeneration steps of Barry. It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the regeneration steps of Barry by utilizing steam in combination with air because steam will perform the same function of reducing temperatures during regeneration as the disclosed nitrogen.

Response to Arguments

The argument that the Gattuso reference does not provide a specific description of phenyl acetylene in a styrene-containing medium nor provides examples showing the hydrogenation of aromatic polyunsaturated hydrocarbons is not persuasive because Gattuso discloses that

phenylacetylene formed during the production of styrene can be selectively hydrogenated to styrene. See col. 3, lines 18-22. The use of the expression "selectively hydrogenated" indicates that phenylacetylene is hydrogenated in the presence of another component. In this case, that other component would necessarily be styrene. The lack of specific examples does not negate this teaching since a reference is not limited solely to the preferred embodiments.

The argument that the catalyst in Gattuso process must contain sulfur and that the claimed process does not use a catalyst that contains a modifying component is noted. This is not persuasive because the claims do not exclude additional components.

The argument regarding unexpected results from the claimed process is not persuasive because such results do not appear to be commensurate in scope with the claims.

The argument that the claimed temperature conditions are different from the disclosed conditions of Gattuso is not persuasive because the temperatures disclosed in column 4, lines 18-22 includes values within the claimed range.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter D. Griffin whose telephone number is 703-305-3774. The examiner can normally be reached on Monday-Friday 6:30 to 4:00 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

Walter D. Griffin
Primary Examiner
Art Unit 1764

WG
April 23, 2002